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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	MM Docket No. 99-25
	)	
Creation of a Low	)	RM-9208
Power Radio Service	)	RM-9242

REPLY COMMENTS OF
LUCENT DIGITAL RADIO, INC.

Diane Law Hsu
Corporate Counsel
Lucent Technologies Inc.
1825 I Street, N.W.
Washington, D.C. 20006
(202) 756-7092

David R. Siddall
Verner, Liipfert, Bernhard,
McPherson and Hand, Ch.
901 15th Street, N.W.
Washington, D.C. 20005
(202) 371-6326

Philip L. Verveer
Willkie Farr & Gallagher
1155 21st Street, N.W.
Washington, D.C. 20036
(202) 429-4740

November 16, 1999

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News Release dated July 29, 1999 – Lucent Digital Radio and Armstrong Transmitter Corporation Announce Continued Tests of Lucent Digital Audio Broadcasting System

Executive Summary

Lucent Digital Radio is working to develop and bring to market an in-band on-channel (IBOC) system that will facilitate the transition of AM and FM analog broadcasting to digital transmission. This technology holds the promise of providing the American public with CD-quality audio fidelity as well as a variety of new data and datacasting services that could include weather, traffic alerts and other emergency-related information.

In this proceeding Lucent's comments are limited to addressing the technical issues related to the impact that the low power FM (LPFM) proposals, if adopted, would have on Lucent's digital IBOC system. Lucent's system is designed to comply with the Commission's existing interference rules, and Lucent urges that any new operations that do not comply with these rules be licensed on a secondary basis only.

The potential for interference merits careful consideration and analysis of the technical performance specifications of receivers. Receiver costs and marketplace dynamics play an important role in determining the characteristics of today's analog receivers, and will continue to do so for tomorrow's digital receivers. Provided that existing interference protections continue to apply, Lucent's IBOC system should not cause increased interference to existing analog operations and should provide superior digital quality.

The Commission should take into account the impact of changing the 2nd adjacent protections of the current protection criteria. Lucent's testing to date suggests minimal impact on Lucent's IBOC system from eliminating 3rd adjacent protection. Based upon our analyses and receiver studies submitted to the Commission, we believe that changes to the 2nd adjacent protection would have important interference implications. We therefore urge that any changes to the 2nd adjacent interference rules permit only secondary operations.

Lucent Digital radio will continue to test its system in the laboratory and in the field, and its results will be submitted to the Commission.

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REPLY COMMENTS OF LUCENT DIGITAL RADIO, INC.

Introduction

Lucent Digital Radio, by its attorneys, hereby files these reply comments concerning the above-captioned rulemaking.[1] Lucent Digital Radio, Inc. ("Lucent"), a subsidiary of Lucent Technologies, Inc., is working to develop and bring to market in-band on-channel (IBOC) technology for AM and FM broadcasting worldwide. Lucent's IBOC systems will enhance audio quality so that digital AM sounds like today's FM, and digital FM like compact discs; it will be resistant to multipath and other forms of interference that impair current AM and FM reception; and it will enable new and innovative data services, such as program-associated data and datacasting and automated public safety messages such as weather and traffic alerts and other emergency-related information.

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[1] *Creation of a Low Power Radio Service,* Notice of Proposed Rulemaking, MM Docket No. 99-25 (FCC 99-6, rel. Feb. 3, 1999) (*"Notice"*).

Lucent's comments are limited to addressing the technical issues related to the impact that the low power FM (LPFM) proposals, if implemented, would have on Lucent's digital IBOC system.

Lucent supports the introduction of digital broadcasting in the AM and FM bands, and opposes the Commission's proposals to the extent that their implementation would impair reception of the digital IBOC signals upon which broadcasters will rely during any analog-to-digital transition. The public interest is in providing for a smooth transition from analog to digital for AM and FM broadcasters

The Potential for an Analog-to-Digital Transition Must Not be Impaired

In its comments on the *Notice*, Lucent addressed the technical issues related to deployment of IBOC that should be considered in this LPFM proceeding. Lucent noted that the proposed rules changes have the potential to harm a transition to digital by impairing both the analog and the digital coverage areas of existing broadcasters. Lucent noted that its IBOC system relies upon the Commission's existing rules to limit interference among stations, which are based upon separation both geographically and in frequency. These rules provide for required desired-to-undesired (D/U) ratios of 20 dB for co-channel protection; 6 dB for 1st adjacent; -40 dB for 2nd adjacent (-20 dB for public broadcasters); and –40 dB for third adjacent. Lucent concluded that, although its analysis was not complete, changing the rules that govern interference inevitably will have consequences for the analog-to-digital transition and that permitting additional stations on adjacent channels likely would interfere with a transition to digital. Lucent therefore proposed that the Commission assign new licenses only on a secondary basis if they do not comply with the Commission's current interference rules.

Third Adjacent Protection

Based upon its testing to date, Lucent has concluded that 3rd adjacent operations will have minimal effect, if any, upon an IBOC signal.

Second Adjacent Protection

Existing Receiver Analog-to-Analog & Digital-to-Analog Interference. The potential for interference to existing analog FM service being created by the introduction of new low power analog stations warrants careful examination and analysis, including consideration of the technical characteristics of the more than 600 million analog receivers that exist in the marketplace today. In its comments, Lucent deferred judgment to the Commission's technical experts and noted that substantial receiver studies have been submitted in the record.

Lucent has reviewed the receiver studies submitted by the Consumer Electronics Association (CEA), the National Association of Broadcasters (NAB), and the FCC staff. Based on the findings of these studies, and on our own analyses and experience, we have observed a wide range of receiver performance with regard to their ability to reject interference from the 2nd adjacent channel. A significant number of existing receivers in the market cannot handle signals that comply with the current requirement of 40 dB D/U. These studies confirm Lucent's statements in its Comments that receiver cost and marketplace dynamics play an important role in determining the quality of receivers available. The technology exists to equal or better performance as envisaged in the Commission's rules, but receiver manufacturers also must consider cost in their marketing and sales.

Dual-Mode Hybrid Receivers, Analog-to-Analog Interference. New, dual-mode receivers can be designed to meet more stringent technical operating specifications than the average analog receiver on the market today. However, as noted above, there is a cost –

performance tradeoff that every manufacturer must make which derives from the decisions that consumers make daily in their purchase decisions. We therefore expect that new receivers will vary over a wide range of technical performance without regard to the theoretical "best" performance that a receiver could attain with regard to its ability to reject 2nd adjacent channel signals. Lucent, as well as the Commission, must take into consideration the likely range of product specifications likely to emerge at consumer-friendly cost points.

Dual-Mode Hybrid Receivers, Digital-to-Analog Interference. As indicated above, dual mode receivers can (and will) be made at different technical specifications due to the economic necessities of the marketplace. At this stage in testing, Lucent has concluded that the interference to the 2nd adjacent analog signal by the digital sidebands used by IBOC systems do not add significantly to the degradation caused by the host analog signal. Therefore, properly protecting analog allotments will, in most cases, provide the protection needed from adding the digital IBOC sidebands.

Dual-Mode Hybrid Receivers, Analog-to-Digital Interference. Despite their closer proximity in frequency to the 2nd adjacent channel, the existing 40 dB protection rules for 2nd adjacent channels are sufficient to protect digital signals from analog interference due to the digital signal's better interference rejection capabilities.

IBOC Testing and the Commission's Digital Radio *Notice*

Lucent is participating in the National Radio Systems Committee (NRSC) and is actively engaged in testing its digital IBOC system both in the laboratory and in the field. Lucent will provide its test data to both the Commission and to the NRSC.

We note that the Commission recently initiated a proceeding to address digital broadcast options in a comprehensive fashion,[2] and that some issues raised in that proceeding also are directly related to the issues in this proceeding. Lucent's information will be submitted, as developed, to the record in both proceedings to the extent that it appears relevant to issues being considered in both.

Stations Not in Conformance With Existing Interference Rules Should be Secondary

The Commission has not yet proposed allotments and technical service rules for specific LPFM authorizations. In its Comments, Lucent stated that IBOC "compatibility" with specific combinations of broadcast and LPFM stations is highly situational, and will be determined by the technical specifics of each individual case. To ensure compatibility between IBOC and any LPFM allotments the Commission may decide to adopt, Lucent continues to believe that the digital IBOC signals of existing broadcasters should be accorded the same primary signal protection as their associated analog signals, and that any new LPFM stations should be accorded secondary status, only if not in compliance with today's interference rules. These suggestions, if adopted, might provide a reasonable means of accommodating both new entrants and a digital future for existing licensees.

Conclusion

In this proceeding and in the Commission's recent *DAB Notice*, the Commission recognized the importance of providing a path for existing broadcasters to transition to digital transmission methods. Lucent's digital IBOC system will facilitate a seamless and consumer-friendly transition without the need for additional spectrum being used for this purpose, but its

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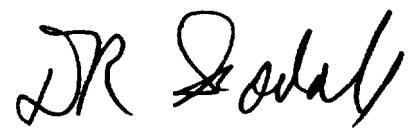
[2] *Digital Audio Broadcasting Systems and Their impact on the Terrestrial Radio Broadcast Service*, Notice of Proposed Rulemaking, MM Docket No. 99-325 (Nov. 1, 1999) ("DAB *Notice*").

system also is based upon the current interference criteria, as detailed above. In considering rules changes at this stage of the process, the Commission should take into account the impact of that change upon current analog operations and planned IBOC digital systems. Based upon our analyses and receiver studies submitted to the Commission, we believe that amending current 3rd adjacent protections will have at most a minimal impact upon our IBOC system. Changes to the 2nd adjacent proection, however, would have important interference implications. We therefore urge that <u>any</u> changes to the interference protections permit only secondary operations. Lucent Digital radio will continue to test its system in the laboratory and in the field, and its results will be submitted to the Commission.

Respectfully submitted,



Diane Law Hsu, Esq.
Corporate Counsel
Lucent Technologies Inc.
1825 I Street, N.W.
Washington, D.C. 20006
(202) 756-7092

David R. Siddall, Esq.
Verner, Liipfert, Bernhard,
McPherson and Hand, Ch.
901 15th Street, N.W.
Washington, D.C. 20005
(202) 371-6326

Philip L. Verveer
Willkie Farr & Gallagher
1155 21st Street, N.W.
Washington, D.C. 20036
(202) 429-4740

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APPENDIX

News Release dated October 1, 1999 – Lucent Digital Radio Applauds National Radio Systems Committee Agreement on In-Band On-Channel (IBOC) System Testing

News Release dated August 31, 1999 – (NAB Radio Show, Booth #751) Lucent Digital Radio and Harman Kardon® Announce Agreement to Develop Digital Radio Receivers and Promote New Technology

News Release dated August 31, 1999 – (NAB Radio Show, Booth #751) Recoton Corporation and Lucent Digital Radio Form Alliance to Develop Digital Audio Broadcast (DAB) Receivers

News Release dated August 30, 1999 – Lucent Digital Radio Survey Finds that 56 Percent of All Americans Want Digital Radio

News Release dated August 26, 1999 – Lucent Digital Radio and Continental Electronics Announce Joint Testing Agreement for Digital Audio Broadcast System

News Release dated August 24, 1999 – Lucent Digital Radio Receivers Investment From Pequot Capital; Strengthens Position in the Digital Radio Industry

News Release dated August 23, 1999 – Lucent Digital Radio and Orban Annouce Agreement to Test Enhanced Audio Processing for In-Band On-Channel Digital Radio

News Release dated August 23, 1999 – Lucent Digital Radio and Moseley Associates Announce Agreement to Test Digital Audio Broadcast System

News Release dated August 17, 1999 – Lucent Digital Radio and QEI Corporation Announce Joint Testing Agreement for Digital Audio Broadcast System

News Release dated August 16, 1999 – Lucent Digital Radio Announces Testing Agreement with Cutting Edge; Will Test the Lucent Perceptual Audio CODER (PAC) in Studio Applications

News Release dated July 29, 1999 – Lucent Digital Radio and Armstrong Transmitter Corporation Announce Continued Tests of Lucent Digital Audio Broadcasting System

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News Release

Lucent Technologies
Bell Labs Innovations

Chris Pfaff
908-582-7571 (office)
800-705-2368 (pager)
cpfaff@lucent.com

David Bikle
908-582-4120 (office)
dbikle@lucent.com

LUCENT DIGITAL RADIO AND MOSELEY ASSOCIATES ANNOUNCE AGREEMENT TO TEST DIGITAL AUDIO BROADCAST SYSTEM

FOR RELEASE: MONDAY, AUGUST 23, 1999

WARREN, N.J. -- Lucent Digital Radio, a wholly-owned subsidiary of Lucent Technologies (NYSE: LU), and Moseley Associates, a leader in the design and manufacture of radio broadcast equipment, today announced that they have agreed to jointly test Studio Transmitter Link (STL) technology that will further develop Lucent Digital Radio's In-Band On-Channel (IBOC) Digital Audio Broadcasting (DAB) system. Tests will commence immediately and will be conducted at both Lucent Digital Radio and Moseley facilities.

The STL link, an integral part of the radio broadcast chain, connects a radio station's studio to its transmitter site. The Lucent Digital Radio IBOC system is designed as an end-to-end solution that will enable broadcast stations to seamlessly convert to an all-digital AM or FM broadcast scheme.

Lucent Digital Radio recently conducted tests of its IBOC FM system on National Public Radio (NPR) member station WBJB-FM. These tests were the first time that an IBOC system successfully passed a hybrid (both analog and digital) signal over a radio station's antenna and transmitter without affecting the host analog signal.

"Working with Moseley, an acknowledged leader in the STL field, will further demonstrate to the radio industry that our IBOC system delivers sound results," said Suren Pai, president of Lucent Digital Radio. "Our end-to-end IBOC system is designed to ensure that radio broadcasters make a seamless transition from analog to an all-digital IBOC future."

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"We believe that IBOC is a tremendous opportunity for all involved in the radio broadcast industry, and we look forward to helping Lucent Digital Radio develop the best possible IBOC system," said David Chancey, national sales manager of Moseley Associates. "Furthermore, our joint efforts will allow our Starlink STL customers to understand how our product works with 21st century radio technology."

Lucent Digital Radio's IBOC DAB system is an enhancement to current analog AM and FM radio broadcasting systems. It will provide greatly enhanced sound quality for AM radio, CD-like quality for FM radio, as well as interference-free reception and innovative new data services.

Lucent Digital Radio draws on several patented Bell Labs digital audio and channel coding techniques that provide robust digital signal delivery in an impaired broadcast channel, including Lucent's Perceptual Audio Coder™ (PAC™) technology, which delivers CD-like quality audio at 96 Kilobits per second; Unequal Error Protection, which prioritizes information based on its impact to audio quality; and Multi-Streaming, which provides for a more robust signal in an impaired channel.

The IBOC approach will allow broadcasters to introduce digital audio programming to listeners on their current dial positions using existing transmitters and antennas. IBOC DAB is both backward- and forward-compatible: current AM/FM receivers will still be able to receive the existing analog signals in the new system. When a station elects to turn off the analog signal in the future, IBOC DAB-compatible receivers will operate with the remaining all-digital signal.

A Lucent Technologies venture, Lucent Digital Radio is developing IBOC DAB technology for AM and FM broadcasting worldwide. Lucent Digital Radio's IBOC system will be resistant to multipath and other forms of interference that impair current analog transmissions.

For marketing or sales information about Lucent Digital Radio, please contact William Casey, Director, Marketing & Sales, on 908-580-7008 or williamcasey@lucent.com. Information is also available on the Web site at www.lucent.com/ldr.

Moseley has been recognized and respected as a leader in communications industry since 1959. Based in Santa Barbara, California, signal in an impaired channel. Moseley designs, manufactures, and markets digital transmission systems for diversified telecommunication industries, and the radio and television broadcast industry.

For more information about Moseley Associates, please contact David Chancey, national sales manager, on 805-968-9621 or chance@moseleysb.com. Information is also available on the Web site at www.moseleysb.com.

Lucent Technologies, headquartered in Murray Hill, N. J., designs, builds and delivers a wide range of public and private networks, communications systems and software, data networking systems, business telephone systems and microelectronic components. Bell Labs is the research and development arm for the company. For more information on Lucent Technologies, visit the company's web site at www.lucent.com.

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News Release

Chris Pfaff
908-582-7571 (office)
800-705-2368 (pager)
cpfaff@lucent.com

David Bikle
908-582-4120 (office)
dbikle@lucent.com

Lucent Technologies
Bell Labs Innovations

LUCENT DIGITAL RADIO SURVEY FINDS THAT
56 PERCENT OF ALL AMERICANS WANT DIGITAL RADIO

FOR RELEASE: MONDAY, AUGUST 30, 1999

WARREN, N.J. -- Fifty-six percent of all radio listeners want digital radio that will make FM sound like a CD and AM to sound more like FM. Whether they tune into hard rock, jazz, talk, sports or public radio, American listeners say they want more choice, a greater range of information and better sound from radio in the new millenium, according to a survey of 900 consumers conducted for Lucent Digital Radio, Inc., a venture owned by Lucent Technologies (NYSE: LU) and Pequot Capital Management, Inc.

The landmark study's results also found that 34 percent of potential digital radio consumers want more choice in content, and 46 percent strongly favor the delivery of new types of products and information from an enhanced display. When all three features are combined in the receiver, 71 percent of consumers intend to buy.

"The survey confirms that consumers are eager for the next generation of radio – digital radio. When they consider the potential benefits of digital radio, a very clear wish list emerges," said Suren Pai, president of Lucent Digital Radio. "Radio is now approaching the digital frontier and Lucent Digital Radio is eager to work with the broadcasting community to make it reality for consumers. Many consumers want it and the technology will soon be available."

Lucent envisions new digital receivers that will be equipped with display panels that show streams of digital information, such as local severe weather alerts (through the Emergency Broadcast System), traffic reports, stock information, or paging.

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Many of the respondents said they would upgrade to a digital radio once it becomes available rather than wait to replace their existing radio. Interest in digital radio is strong – across all age segments but strongest in the 16-24 age group, where almost 70 percent said they would be interested in a new digital radio home receiver. Another 62 percent would be interested in a digital car stereo receiver.

"Our survey indicates that the combination of a fully featured digital radio at an affordable price will appeal to scores of consumers," said Pai.

The Lucent survey, conducted by Stratford Research, is based on a random sample of 900 consumers, ages 16 to 49 during the July/August time period.

Lucent Digital Radio, Inc. is a company developing IBOC DAB technology for AM and FM broadcasting worldwide. Lucent Digital Radio's IBOC system will be resistant to multipath and other forms of interference that impair current analog transmissions. Information is also available on the Web site at www.lucent.com/ldr.

The Pequot Private Equity Funds are the private placement/direct investment arm of Pequot Capital Management, Inc. The Pequot Private Equity Funds invest in public and late stage private companies in information technology, telecommunications and healthcare. The Pequot Venture Fund invests in seed and early stage technology companies. Pequot Capital Management, Inc. is a research-intensive investment firm with more than US$6 billion in assets under management. Pequot Capital, which is 100 percent employee-owned, is headquartered in Westport, Connecticut, with offices in New York City and California. For more information about Pequot Capital, visit the Web site at www.pequotcap.com.

Lucent Technologies, headquartered in Murray Hill, N. J., designs, builds and delivers a wide range of public and private networks, communications systems and software, data networking systems, business telephone systems and microelectronic components. Bell Labs is the research and development arm for the company. For more information on Lucent Technologies, visit the company's web site at www.lucent.com

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News Release

Lucent Technologies
Bell Labs Innovations

Chris Pfaff
Lucent Technologies
908-582-7571 (office)
800-705-2368 (pager)
cpfaff@lucent.com

Peter Ildau
Recoton Corporation
212-644-0220 (office)
ildau@recoton.com

NAB RADIO SHOW, BOOTH# 751

RECOTON CORPORATION AND LUCENT DIGITAL RADIO FORM ALLIANCE TO DEVELOP DIGITAL AUDIO BROADCAST (DAB) RECEIVERS

FOR RELEASE: TUESDAY, AUGUST 31, 1999

LAKE MARY, FL and WARREN, NJ – Recoton Corporation (NASDAQ National Market: RCOT), a leading supplier under the Jensen® brand name for car and home audio products, and Lucent Digital Radio, Inc., a venture of Lucent Technologies (NYSE: LU) and Pequot Capital Management, Inc., have formed a collaboration alliance for the development and testing of In-Band On Channel (IBOC) Digital Audio Broadcast (DAB) receivers for consumers.

The two companies will begin test and development efforts immediately at both Recoton and Lucent facilities and field-testing will follow shortly. Recoton has previously announced that it is creating and developing products for CD Radio ®, a leading Satellite Digital Audio Radio System (SDARS) company.

The Lucent Digital Radio IBOC system is designed as an end-to-end solution that will enable broadcast stations to seamlessly convert to an all-digital AM or FM broadcast scheme. Lucent Digital Radio recently conducted tests of its IBOC FM system on National Public Radio (NPR) member station WBJB-FM. These tests were the first time that an IBOC system successfully passed a hybrid (both analog and digital) signal over a radio station's antenna and transmitter without affecting the host analog signal.

- more -

Robert L. Borchardt, President and CEO of Recoton Corporation in making the announcement, stated "The radio listening experience is about to undergo a momentous transformation from analog to digital, and we believe that our work with Lucent Digital Radio will help move the industry into the digital era." He further commented, "Very few companies have the resources to undertake such an endeavor, and we know that both Recoton and Lucent's commitment to excellence offers us both a remarkable opportunity for our customers and ultimately the consumer."

"The consumer retail channel has considerable confidence in Recoton and the Jensen brand name, and we believe that their efforts in helping to develop IBOC receivers will help prepare the industry for this critical transition from analog to digital radio," said Suren Pai, President of Lucent Digital Radio. "We are very glad to have the opportunity to work with a leader in the consumer audio field, and look forward to developing high-quality, reliable IBOC receivers that consumers will want to buy."

According to the Consumer Electronics Manufacturers Association (CEMA), there are more than 600 million radios in the United States, or more than six per household. Radio is consumed by more than 235 million Americans on an average weekly basis of 22 hours. The digital radio era will enable new forms of content services and devices to deliver greater quality and quantity of programming to more listeners than ever before.

Lucent Digital Radio's IBOC DAB system is an enhancement to current analog AM and FM radio broadcasting systems. It will provide greatly enhanced sound quality for AM radio, CD-like quality for FM radio, as well as interference-free reception and innovative new data services.

Lucent Digital Radio draws on several patented Bell Labs digital audio and channel coding techniques that provide robust digital signal delivery in an impaired broadcast channel, including Lucent's Perceptual Audio Coder™ (PAC™) technology, which delivers CD-like quality audio at 96 Kilobits per second; Unequal Error Protection, which prioritizes information based on its impact to audio quality; and Multi-Streaming, which provides for a more robust signal in an impaired channel.

The IBOC approach will allow broadcasters to introduce digital audio programming to listeners on their current dial positions using existing transmitters and antennas. IBOC DAB is both backward- and forward-compatible: current AM/FM receivers will still be able to receive the existing analog signals in the new system. When a station elects to turn off the analog signal in the future, IBOC DAB-compatible receivers will operate with the remaining all-digital signal.

Lucent Digital Radio, Inc., a venture owned by Lucent Technologies and Pequot Capital Management, Inc., is a company developing IBOC DAB technology for AM and FM broadcasting worldwide. For more information, visit the company's Web site at www.lucent.com/ldr. Lucent Digital Radio's IBOC system will be resistant to multi-path and other forms of interference that impair current analog transmissions which Recoton intends to utilize in their design and development of several satellite digital audio receiving devices, including a plug and play adapter, which will work through the cassette bay of existing car stereos, as well as a second adapter which works with 95% of existing car stereos. In addition, Recoton's mobile audio division will develop and market Jensen brand aftermarket 3-band (AM/FM/Digital) car stereo receivers.

This press release may contain forward-looking information within the meaning of the Private Securities Litigation Reform Act of 1995. Such statements are subject to certain risks and uncertainties that could cause actual results to differ materially from historical earnings and those presently anticipated or projected. Such statements speak only as of the date made. Please refer to the Company's current Form 10-K and other SEC filings.

Recoton Mobile Electronics is a division of Recoton Audio Corporation, a subsidiary of Recoton Corporation, a global leader in the development, manufacturing and marketing of consumer electronic accessories, loudspeakers and car audio products. Recoton's more than 4,000 products feature highly functional accessories for audio, video, car audio, camcorder, multimedia/computer, home office, cellular and standard telephone, music and video game products and 900MHz wireless technology headphones and speakers. They are sold under the AAMP®, Ambico®, Ampersand™, AR®/Acoustic Research®, Calibron®, Discwasher®, InterAct®, Jensen® Parsec®, Peripheral®, Performance™, Recoton®, Rembrandt®, Ross™, Sole Control®, SoundQuest®, Stinger®, and STD™ brand names. Visit the Company's website at www.recoton.com and www.RCOT.com .

Lucent Technologies, headquartered in Murray Hill, N.J., designs, builds and delivers a wide range of public and private networks, communications systems and software, data networking systems, business telephone systems and microelectronic components. Bell Labs is the research and development arm for the company. For more information on Lucent Technologies, visit the company's Web site at www.lucent.com.

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Note to Editors:

Lucent is hosting a **media conference call** concerning this announcement **Tuesday, August 31, at 10:00 am Eastern Time**
Inside the U.S., the Dial-in Number is: **800-230-1085**

The call will be recorded and replayed for beginning at 1:00 pm EST on August 31 and concluding at 12:00 am EST September 3

The telephone number to call for the replay is **800-475-6701**; international callers should dial **320-365-3844**. The access code is **467781**

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News Release

Lucent Technologies
Bell Labs Innovations

Chris Pfaff
Lucent Technologies
908-582-7571 (office)
800-705-2368 (pager)
cpfaff@lucent.com

Lynn Proctor Windle
Publicis Dialogue
214-443-9901, ext 5426 (office)
lynn_windle@publicis-usa.com

David Bikle
Lucent Technologies
908-582-4120 (office)
dbikle@lucent.com

LUCENT DIGITAL RADIO AND CONTINENTAL ELECTRONICS ANNOUNCE JOINT TESTING AGREEMENT FOR DIGITAL AUDIO BROADCAST SYSTEM

FOR RELEASE: THURSDAY, AUGUST 26, 1999

WARREN, N.J. -- Lucent Digital Radio, Inc., a venture owned by Lucent Technologies (NYSE: LU) and Pequot Capital Management, Inc., and Continental Electronics Corp. (CEC), a subsidiary of Tech-Sym Corporation (NYSE: TSY), today announced they have agreed to jointly test transmitter technology that will further develop Lucent Digital Radio's In-Band On-Channel (IBOC) Digital Audio Broadcasting (DAB) system.

Lucent Digital Radio will test both its IBOC AM and FM systems with CEC's transmitters. CEC is a leader in the design and manufacture of radio broadcast equipment. Lucent Digital Radio recently conducted tests of its IBOC FM system on National Public Radio (NPR) member station WBJB-FM. These tests were the first time that an IBOC system successfully passed a hybrid (both analog and digital) signal over a radio station's antenna and transmitter without affecting the host analog signal.

"Continental Electronics is a premier manufacturer of broadcast transmission equipment and an acknowledged technical leader in the radio industry. They will help us move the radio industry into the IBOC era," said Suren Pai, president of Lucent Digital Radio. "We are focused on preparing Continental's customers, and the industry as a whole, for the tremendous benefit that IBOC brings to radio broadcasting."

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"The opportunity to conduct joint testing with Lucent Digital Radio on their IBOC system is key to our strategic mission to provide technical leadership in the broadcasting business," said David Burkey, president of CEC. "Our experience with developing DAB products for Europe, coupled with our 50-plus years of broadcast industry experience, will allow us to give Lucent Digital Radio the valuable input necessary to ensure a robust and successful IBOC system."

Lucent Digital Radio's IBOC DAB system is an enhancement to current analog AM and FM radio broadcasting systems. It will provide greatly enhanced sound quality for AM radio, CD-like quality for FM radio, as well as interference-free reception and innovative new data services.

Lucent Digital Radio draws on several patented Bell Labs digital audio and channel coding techniques that provide robust digital signal delivery in an impaired broadcast channel, including Lucent's Perceptual Audio Coder™ (PAC™) technology, which delivers CD-like quality audio at 96 Kilobits per second; Unequal Error Protection, which prioritizes information based on its impact to audio quality; and Multi-Streaming, which provides for a more robust signal in an impaired channel.

The IBOC approach will allow broadcasters to introduce digital audio programming to listeners on their current dial positions using existing transmitters and antennas. IBOC DAB is both backward- and forward-compatible: current AM/FM receivers will still be able to receive the existing analog signals in the new system. When a station elects to turn off the analog signal in the future, IBOC DAB-compatible receivers will operate with the remaining all-digital signal.

A global leader in broadcast transmitter equipment, CEC, a subsidiary of Tech-Sym Corporation (NYSE:TSY), provides a full range of reliable products for AM/FM radio, digital television, high power, and digital audio broadcasting applications. Founded in 1946, Dallas-based CEC is the foremost supplier of advanced RF transmission technology and the world's most experienced designer and builder of high-power broadcast equipment. With subsidiaries in Chile and Germany, CEC's products are used in more than 100 countries. For more information about CEC, visit the company's Web site at www.contelec.com or call 1-800-733-5011.

Lucent Digital Radio, Inc. is a company developing IBOC DAB technology for AM and FM broadcasting worldwide. Lucent Digital Radio's IBOC system will be resistant to multipath and other forms of interference that impair current analog transmissions. Information is also available on the Web site at www.lucent.com/ldr.

For marketing or sales information about Lucent Digital Radio, please contact William Casey, Director, Marketing & Sales, on 908-580-7008 or by e-mail at williamcasey@lucent.

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News Release

ORIGINAL

Lucent Technologies
Bell Labs Innovations

Chris Pfaff
908-582-7571 (office)
800-705-2368 (pager)
cpfaff@lucent.com

David Bikle
908-582-4120 (office)
dbikle@lucent.com

LUCENT DIGITAL RADIO AND ORBAN ANNOUNCE AGREEMENT TO TEST ENHANCED AUDIO PROCESSING FOR IN-BAND ON-CHANNEL DIGITAL RADIO

FOR RELEASE: MONDAY, AUGUST 23,1999

WARREN, N.J. -- Lucent Digital Radio, a wholly-owned subsidiary of Lucent Technologies (NYSE: LU), and Orban, a worldwide leader in broadcast audio solutions, have announced a joint testing agreement in which the two companies will work to optimize the audio quality for In-Band On-Channel (IBOC) Digital Audio Broadcast (DAB). The Lucent Digital Radio IBOC DAB system, which has passed successful field tests, will be tested with Orban's popular OPTIMOD™ family of audio processors, which are installed in more than 25,000 broadcast locations around the world.

Audio processing is a key element in the enhancement of a radio station's over-the-air signal. Lucent's Perceptual Audio Coder™ (PAC™), the industry's highest quality audio codec, is used in the Lucent Digital Radio IBOC DAB system and will be tested with Orban audio processors. Because PAC can be enhanced, the tests will ensure that both audio processing and audio coding are mutually developed and optimized.

"We are developing an end-to-end system solution for IBOC and the first part of the broadcast chain is the audio processing. The combination of Orban's studio sound processing expertise with our PAC coder will help radio stations deliver the clearest possible digital audio over the air," said Suren Pai, president of Lucent Digital Radio. "Orban has literally helped shape the sound of radio today. We look forward to working with them."

Lucent Digital Radio recently conducted tests of its IBOC FM system on National Public Radio (NPR) member station WBJB-FM. These tests were the first time that an IBOC system successfully passed a hybrid (both analog and digital) signal over a radio station's antenna and transmitter without affecting the host analog signal.

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"We are delighted to work with Lucent Digital Radio to verify that Orban's OPTIMOD audio processors complement Lucent's IBOC DAB system," said Bob Orban, chief engineer and founder of Orban. "Our joint efforts in testing our equipment with the Lucent PAC coder will ensure that stations using the Lucent IBOC system can get the benefits of OPTIMOD's audience-pleasing loudness, consistency, and smoothness."

Lucent Digital Radio will conduct a live listening demonstration of the Lucent PAC coder passing through the Orban OPTIMOD audio processor at its Booth #751 at the NAB Radio Show in Orlando, Fla., from August 31 to September 2.

Lucent Digital Radio's IBOC DAB system is an enhancement to current analog AM and FM radio broadcasting systems. It will provide greatly enhanced sound quality for AM radio, CD-like quality for FM radio, as well as interference-free reception and innovative new data services.

Lucent Digital Radio draws on several patented Lucent digital audio and channel coding techniques that provide robust digital signal delivery in an impaired broadcast channel, including Lucent's Perceptual Audio Coder™ (PAC™) technology, which delivers CD-like quality audio at 96 Kilobits per second; Unequal Error Protection, which prioritizes information based on its impact to audio quality; and Multi-Streaming, which provides for a more robust signal in an impaired channel.

The IBOC approach will allow broadcasters to introduce digital audio programming to listeners on their current dial positions using existing transmitters and antennas. IBOC DAB is both backward- and forward-compatible: current AM/FM receivers will still be able to receive the existing analog signals in the new system. When a station elects to turn off the analog signal in the future, IBOC DAB-compatible receivers will operate with the remaining all-digital signal.

Orban, based in San Leandro, California, is a Harman International Company that creates and offers broadcast and Webcast transmission audio processors and digital workstations. Orban products are in use by broadcasters around the world, from small private radio stations to the world's largest and most prestigious national broadcasting organizations and now Webcasters. For further information on Orban, please contact Amy Huson, Vice President of Business Development, on 510-351-3500, or ahuson@orban.com. Information is available at the Orban Web site at www.orban.com.

Lucent Digital Radio is a Lucent Technologies venture with a mission to develop IBOC DAB technology for AM and FM broadcasting worldwide. Lucent Digital Radio's IBOC system will be resistant to multipath and other forms of interference that impair current analog transmissions.

For marketing or sales information about Lucent Digital Radio, please contact William Casey, Director, Marketing & Sales, on 908-580-7008 or williamcasey@lucent.com. Information is also available on the Web site at www.lucent.com/ldr.

Lucent Technologies, headquartered in Murray Hill, N. J., designs, builds and delivers a wide range of public and private networks, communications systems and software, data networking systems, business telephone systems and microelectronic components. Bell Labs is the research and development arm for the company. For more information on Lucent Technologies, visit the company's web site at www.lucent.com.

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Chris Pfaff
908-582-7571 (office)
800-705-2368 (pager)
cpfaff@lucent.com

Kevinn Tam
Cutting Edge
216-241-3343 (office)
kevinnt@nogrunge.com

LUCENT DIGITAL RADIO ANNOUNCES TESTING AGREEMENT WITH CUTTING EDGE; WILL TEST THE LUCENT PERCEPTUAL AUDIO CODER (PAC) IN STUDIO APPLICATIONS

FOR RELEASE: TUESDAY, AUGUST 16, 1999

WARREN, N.J. -- Lucent Digital Radio, a wholly-owned subsidiary of Lucent Technologies (NYSE: LU), has announced a joint testing agreement with Cutting Edge, a Telos company, in which the Lucent Perceptual Audio Coder™ (PAC™), the industry's leading audio coder, will be tested with Cutting Edge's Omnia line of audio processors.

The tests will commence immediately and will be conducted at both Lucent Digital Radio's facilities and at commercial radio stations. Lucent Digital Radio's In-Band On Channel (IBOC) Digital Audio Broadcast (DAB) system, which uses PAC to encode the audio from a radio station, is currently being field tested. The Lucent Digital Radio IBOC system is designed as an end-to-end solution that will enable broadcast stations to seamlessly convert to an all-digital AM or FM broadcast scheme.

"Cutting Edge delivers first-class audio processing solutions for radio broadcasters worldwide today, and they represent an ideal testing partner for our PAC coder," said Suren Pai, president of Lucent Digital Radio. "We want to demonstrate that PAC, an important component of our IBOC DAB system, will work seamlessly with audio equipment to produce vastly improved sound for tomorrow's digital radio stations."

Lucent Digital Radio recently conducted tests of its IBOC FM system on National Public Radio (NPR) member station WBJB-FM. These tests were the first time that an IBOC system successfully passed a hybrid (both analog and digital) signal over a radio station's antenna and transmitter without affecting the host analog signal.

"DAB will offer broadcasters and listeners significant benefits over existing broadcast methods, not the least of which is improved audio quality," commented Michael Dosch, Managing Director of Telos Systems/Cutting Edge. "We look forward to helping the radio industry define and implement future standards for DAB."

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Lucent Digital Radio will conduct a live listening demonstration of the Lucent PAC coder passing through a Cutting Edge Omnia audio processor at its Booth #751 at the NAB Radio Show in Orlando, FL, from August 31-September 2.

Lucent Digital Radio's IBOC DAB system is an enhancement to current analog AM and FM radio broadcasting systems. It will provide greatly enhanced sound quality for AM radio, CD-like quality for FM radio, as well as interference-free reception and innovative new data services.

Lucent Digital Radio draws on several patented Lucent digital audio and channel coding techniques that provide robust digital signal delivery in an impaired broadcast channel, including Lucent's Perceptual Audio Coder™ (PAC™) technology, which delivers CD-like quality audio at 96 Kilobits per second; Unequal Error Protection, which prioritizes information based on its impact to audio quality; and Multi-Streaming, which provides for a more robust signal in an impaired channel.

The IBOC approach will allow broadcasters to introduce digital audio programming to listeners on their current dial positions using existing transmitters and antennas. IBOC DAB is both backward- and forward-compatible: current AM/FM receivers will still be able to receive the existing analog signals in the new system. When a station elects to turn off the analog signal in the future, IBOC DAB-compatible receivers will operate with the remaining all-digital signal.

Celebrating 10 years of leadership and excellence in the broadcast community, Cutting Edge is world-renowned for its innovative digital audio signal processing expertise. Headquartered in Cleveland, Ohio, with additional offices in San Francisco and Freising, Germany, its Omnia family of digital audio dynamics processors for FM, DAB, and the Internet is setting new standards for audio quality in the broadcast and Internet industries worldwide. For additional information about Cutting Edge, please call (216) 241-3343 or browse www.nogrunge.com.

Lucent Digital Radio is a Lucent Technologies venture with a mission to develop IBOC DAB technology for AM and FM broadcasting worldwide. Lucent Digital Radio's IBOC system will be resistant to multipath and other forms of interference that impair current analog transmissions.

For marketing or sales information about Lucent Digital Radio, please contact William Casey, Director, Marketing & Sales, on 908-580-7008 or williamcasey@lucent.com. Information is also available on the Web site at www.lucent.com/ldr.

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cpfaff@lucent.com

David Bikle
908-582-4120 (office)
201-871-0104 (home)
dbikle@lucent.com

LUCENT DIGITAL RADIO AND QEI CORPORATION ANNOUNCE JOINT TESTING AGREEMENT FOR DIGITAL AUDIO BROADCAST SYSTEM

FOR RELEASE: TUESDAY, AUGUST 17,1999

WARREN, N.J. -- Lucent Digital Radio, a wholly-owned subsidiary of Lucent Technologies (NYSE: LU), and QEI Corporation, a leading manufacturer of radio broadcast equipment, today announced that they have agreed to jointly test transmitter technology that will facilitate Lucent Digital Radio's In-Band On-Channel (IBOC) Digital Audio Broadcasting (DAB) system.

Lucent Digital Radio and QEI will conduct laboratory waveform tests at QEI's facilities, as part of the final development of Lucent Digital Radio's end-to-end IBOC system.

"We are very pleased to add QEI as a partner for testing our IBOC system," said Suren Pai, president of Lucent Digital Radio. "We are driving toward delivery of the best possible system for broadcasters and consumers."

Lucent Digital Radio's IBOC DAB system is an enhancement to current analog AM and FM radio broadcasting systems. It will provide greatly enhanced sound quality for AM radio and CD-like quality for FM radio, as well as interference-free reception and innovative new data services.

"QEI believes that the future of radio is IBOC," said Charles H. Haubrich, president and chief executive officer of QEI Corporation.

Lucent Digital Radio will conduct a live demonstration of its end-to-end IBOC DAB system at its Booth #751 at the NAB Radio Show in Orlando, FL, from August 31-September 2.

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Lucent Digital Radio draws on several patented Bell Labs digital audio and channel coding techniques that provide robust digital signal delivery in an impaired broadcast channel, including Lucent's Perceptual Audio Coder (PAC™) technology, which delivers CD-like quality audio at 96 Kilobits per second; Unequal Error Protection, which prioritizes information based on its effect on audio quality; and Multi-Streaming, which provides for a more robust signal in an impaired channel.

The IBOC approach will allow broadcasters to introduce digital audio programming to listeners on their current dial positions using existing transmitters and antennas. IBOC DAB is both backward- and forward-compatible: current AM/FM receivers will still be able to receive the existing analog signals in the new system. When a station elects to turn off the analog signal in the future, IBOC DAB-compatible receivers will operate with the remaining all-digital signal.

QEI Corporation is a manufacturer of broadcast, scientific RF and digital products. In 1982, they pioneered solid-state FM transmitter design with the first commercial 1 kW solid-state FM transmitter. They continue to be an industry leader in both low and high power FM systems. In addition to meeting the needs of the broadcasters, QEI supplies equipment for many scientific RF applications, and was recently awarded a contract to provide Brookhaven National Lab with driver amplifiers for the Relativistic Heavy Ion Collider (RHIC).

QEI remains one of a select group of manufacturers who still produce their RF amplifiers domestically.

For more information about QEI, please contact Jeff Detweiler, Sales Manger, on 800-334-9154 or qeisales@qei-broadcast.com. Information is also available on the Web site at www.qei-broadcast.com.

Lucent Digital Radio is a Lucent Technologies venture with a mission to develop IBOC DAB technology for AM and FM broadcasting worldwide. The Lucent Digital Radio IBOC system will be resistant to multipath and other forms of interference that impair current analog transmissions.

For marketing and sales information about Lucent Digital Radio, please contact William Casey, Director, Marketing & Sales, on 908-580-7008 or williamcasey@lucent.com. Information is also available on the Web site at www.lucent.com/ldr.

Lucent Technologies, headquartered in Murray Hill, N. J., designs, builds and delivers a wide range of public and private networks, communications systems and software, data networking systems, business telephone systems and microelectronic components. Bell Labs is the research and development arm for the company. For more information on Lucent Technologies, visit the company's web site at www.lucent.com.

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dbikle@lucent.com

LUCENT DIGITAL RADIO RECEIVES INVESTMENT FROM PEQUOT CAPITAL; STRENGTHENS POSITION IN THE DIGITAL RADIO INDUSTRY

FOR RELEASE: TUESDAY, AUGUST 24, 1999

WARREN, N.J. -- Lucent Digital Radio today announced an investment from Pequot Capital Management, Inc. to create a new entity. Lucent Digital Radio, Inc. will be owned by Pequot Capital investors and Lucent Technologies (NYSE: LU), which will hold a majority ownership stake in Lucent Digital Radio, Inc.

Lucent will continue to support Lucent Digital Radio, Inc. and will provide ongoing access to state-of-the-art research from the company's Bell Labs research and development unit.

Lucent Digital Radio is a technical leader in the development of In-Band On-Channel (IBOC) Digital Audio Broadcasting (DAB) and is currently conducting field tests of its IBOC DAB system. Lucent Digital Radio will also continue to develop the Lucent Perceptual Audio Coder™ (PAC™) for satellite and Internet radio applications.

The Lucent Digital Radio IBOC DAB system is designed as an end-to-end solution that will enable broadcast stations to seamlessly convert to an all-digital AM or FM broadcast system. Digital radio will enable listeners to enjoy crystal-clear audio and innovative new data services over regular broadcast signals. Listeners will be able to hear IBOC, satellite, or Internet audio over the same receiver – whether in their car or at home - with wide varieties of programming and interactive services.

"Lucent Digital Radio is now positioned squarely at the forefront of the dawn of digital radio," said Suren Pai, president of Lucent Digital Radio, Inc.

"As the radio industry begins its next major technology revolution, we are impressed with the Lucent Digital Radio technology – both the IBOC and the PAC technology – to meet this demanding new digital broadcast environment," said Gerald Poch, a principal of Pequot Equity Funds and Pequot Venture Fund.

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"Lucent Digital Radio exemplifies the value creation model of Lucent's New Ventures Group and we welcome Pequot Capital in this exciting new phase of our business," said Tom Uhlman, president of the Lucent New Ventures Group. "Lucent Digital Radio was built on 15 years of Bell Labs expertise in digital audio coding, and the emerging results of its field tests demonstrate the scale of the company's technical prowess."

For more information about Lucent Digital Radio, Inc., please visit the Web site at www.lucent.com/ldr.

The Pequot Private Equity Funds are the private placement/direct investment arm of Pequot Capital Management, Inc. The Pequot Private Equity Funds invest in public and late stage private companies in information technology, telecommunications and healthcare. The Pequot Venture Fund invests in seed and early stage technology companies. Pequot Capital Management, Inc. is a research-intensive investment firm with more than US$6 billion in assets under management. Pequot Capital, which is 100 percent employee-owned, is headquartered in Westport, Connecticut, with offices in New York City and California.

Lucent Technologies, headquartered in Murray Hill, N. J., designs, builds and delivers a wide range of public and private networks, communications systems and software, data networking systems, business telephone systems and microelectronic components. Bell Labs is the research and development arm for the company. For more information on Lucent Technologies, visit the company's web site at www.lucent.com.

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Note to Editors:

Lucent is hosting a **media conference call** concerning this announcement
Tuesday, August 24, at 10:00 am Eastern Time
Inside the U.S., the Dial-in Number is: **800-288-8960**

The call will be recorded and replayed for 48 hours beginning at 1:00 pm EST on August 24

The telephone number to call for the replay is **800-475-6701**; international callers should dial **320-365-3844**. The access code is **466734**

BACKGROUND INFORMATION ON LUCENT DIGITAL RADIO, INC.

Launched in May, 1998, Lucent Digital Radio has expertise in audio coding, digital wireless communications, integrated circuits and digital signal processing, and has retained some of the finest designers in the industry.

Lucent Digital Radio's In-Band On Channel (IBOC) Digital Audio Broadcast (DAB) system is an enhancement to current analog AM and FM radio broadcasting systems. It will provide greatly enhanced sound quality for AM radio, CD-like quality for FM radio, as well as interference-free reception and innovative new data services.

Lucent Digital Radio recently conducted tests of its IBOC FM system on National Public Radio (NPR) member station WBJB-FM. These tests were the first time that an IBOC system successfully passed a hybrid (both analog and digital) signal over a radio station's antenna and transmitter without affecting the host analog signal. In January of this year, Lucent Digital Radio announced a significant advance in IBOC technology, called Multi-Streaming, which mitigates the problems associated with the coverage and interference of digital radio signals.

Backed by Bell Labs research, the company is developing an end-to-end IBOC DAB system and is jointly testing and developing its system with radio industry leaders in audio processing (Cutting Edge, Orban); analog/digital RFcombiners (ERI); transmitters (Armstrong, Broadcast Electronics, Harris Corp., Nautel Ltd., and QEI Corporation); and studio-to-transmitter links (Harris Intraplex, Moseley).

Lucent Digital Radio draws on several patented Bell Labs digital audio and channel coding techniques that provide robust digital signal delivery in an impaired broadcast channel, including Lucent's Perceptual Audio Coder™ (PAC™) technology, which delivers CD-like quality audio at 96 Kilobits per second; Unequal Error Protection, which prioritizes information based on its impact to audio quality; and Multi-Streaming, which provides for a more robust signal in an impaired channel.

The IBOC approach will allow broadcasters to introduce digital audio programming to listeners on their current dial positions using existing transmitters and antennas. IBOC DAB is both backward- and forward-compatible: current AM/FM receivers will still be able to receive the existing analog signals in the new system. When a station elects to turn off the analog signal in the future, IBOC DAB-compatible receivers will operate with the remaining all-digital signal.

Lucent Digital Radio is developing IBOC DAB technology for AM and FM broadcasting worldwide and to provide audio and integrated circuit design technology for satellite and Internet radio applications. Lucent Digital Radio's IBOC system will be resistant to multipath and other forms of interference that impair current analog transmissions.

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Chris Pfaff
908-582-7571 (office)
800-705-2368 (pager)
cpfaff@lucent.com

Ernie Belanger
Armstrong Transmitter Corporation
315-673-1269 (office)
armtx@mhonline.net

LUCENT DIGITAL RADIO AND ARMSTRONG TRANSMITTER CORPORATION ANNOUNCE CONTINUED TESTS OF LUCENT DIGITAL AUDIO BROADCASTING SYSTEM

FOR RELEASE: THURSDAY, JULY 29,1999

WARREN, N.J. -- Lucent Digital Radio, a wholly-owned subsidiary of Lucent Technologies (NYSE:LU), and Armstrong Transmitter Corporation, a well-known transmitter manufacturer, today announced they will extend their testing of transmitter technology used in Lucent Digital Radio's In-Band On-Channel (IBOC) Digital Audio Broadcasting (DAB) system.

Lucent Digital Radio recently conducted tests of its IBOC FM system on National Public Radio (NPR) member station WBJB-FM using an Armstrong transmitter. These tests were the first time that an IBOC system successfully passed a hybrid (both analog and digital) signal over a radio station's antenna and transmitter without affecting the host analog signal.

"Our work with Armstrong at station WBJB-FM has allowed us to demonstrate a successful series of over-the-air IBOC transmissions," said Suren Pai, president of Lucent Digital Radio. "The Armstrong transmitter has operated flawlessly with our system since it was installed in early April of this year."

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"We are excited to be working with Lucent to enable the future of digital radio," said Sinan Mimaroglu, president of Armstrong Transmitter. "Armstrong is firmly committed to IBOC; our product line is solidly focused on digital transmission. We are pleased that Lucent Digital Radio has demonstrated our technical capabilities, which reinforces our reputation for building high-quality, highly reliable products."

Lucent Digital Radio's IBOC DAB system is an enhancement to current analog AM and FM radio broadcasting systems. It will provide greatly enhanced sound quality for AM radio, CD-like quality for FM radio, as well as interference-free reception and innovative new data services.

Lucent Digital Radio draws on several patented Lucent digital audio and channel coding techniques that provide robust digital signal delivery in an impaired broadcast channel, including Lucent's Perceptual Audio Coder™ (PAC™) technology, which delivers CD-like quality audio at 96 Kilobits per second; Unequal Error Protection, which prioritizes information based on its impact to audio quality; and Multi-Streaming, which provides for a more robust signal in an impaired channel.

The IBOC approach will allow broadcasters to introduce digital audio programming to listeners on their current dial positions using existing transmitters and antennas. IBOC DAB is both backward- and forward-compatible: current AM/FM receivers will still be able to receive the existing analog signals in the new system. When a station elects to turn off the analog signal in the future, IBOC DAB-compatible receivers will operate with the remaining all-digital signal.

Armstrong Transmitter Corporation manufactures a complete line of FM Transmitters, UHF Television Transmitters, Frequency Agile STL systems and FM and UHF TV Antenna systems. The Marcellus, New York Company was founded in 1987. For additional information about Armstrong Transmitter and its products contact Ernie Belanger at 315-673-1269 or fax 315-673-9972 or email sales@armstrongtx.com.

Lucent Digital Radio is a Lucent Technologies venture with a mission to develop IBOC DAB technology for AM and FM broadcasting worldwide. Lucent Digital Radio's IBOC system will be resistant to multipath and other forms of interference that impair current analog transmissions.

For more information about Lucent Digital Radio, please contact William Casey, Director, Marketing & Sales, on 908-580-7008 or williamcasey@lucent.com. Information is also available on the Web site at www.lucent.com/ldr.

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Chris Pfaff
908-582-7571 (office)
800-705-2368 (pager)
cpfaff@lucent.com

David Bikle
908-582-4120 (office)
dbikle@lucent.com

Franklyn Roth
Dobbin/Bolgla Associates
212-388-1400 (office)
froth@dba-pr.com

NAB RADIO SHOW, BOOTH #751

LUCENT DIGITAL RADIO AND HARMAN KARDON® ANNOUNCE AGREEMENT TO DEVELOP DIGITAL RADIO RECEIVERS AND PROMOTE NEW TECHNOLOGY

FOR RELEASE: TUESDAY, AUGUST 31, 1999

WARREN, N.J. -- Lucent Digital Radio, Inc., a venture owned by Lucent Technologies (NYSE:LU) and Pequot Capital Management, Inc., today announced an agreement between Lucent Digital Radio and Harman Kardon® to develop prototype receivers using Lucent's In-Band On Channel (IBOC) Digital Audio Broadcast (DAB) digital radio technology.

"We are giving birth to a whole new generation of devices that can decode digital radio signals, which will enable consumers – who are not just radio listeners any more – to receive CD-like sound and different forms of data, from news and traffic alerts to song title information," said Suren Pai, president and CEO of Lucent Digital Radio, Inc. "We believe that our work with Harman Kardon will help us realize the goal of a working IBOC receiver that will be designed to take full advantage of digital radio's enormous potential."

Digital radio receivers will have larger liquid crystal display (LCD) panels than today's receivers, allowing consumers to receive data that is carried over an FM or AM radio station's signal at rates up to 100 kilobits per second, much faster than the rates currently available to mobile Internet users.

According to the Consumer Electronics Manufacturers Association (CEMA), there are more than 600 million radios in the United States, or more than 6 per household. More than 235 million Americans on an average weekly basis of 22 hours consume radio. The digital radio era will enable new forms of content services and devices to deliver greater quality and quantity of programming to more listeners than ever before.

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Lucent Digital Radio's IBOC DAB system is an enhancement to current analog AM and FM radio broadcasting systems. It will provide greatly enhanced sound quality for AM radio, CD-like quality for FM radio, as well as interference-free reception and innovative new data services.

Lucent Digital Radio draws on several patented Bell Labs digital audio and channel coding techniques that provide robust digital signal delivery, even in an impaired broadcast channel. Other technologies include Lucent's Perceptual Audio Coder™ (PAC™) technology, which delivers CD-like quality audio at 96 Kilobits per second; Unequal Error Protection, which prioritizes information based on its impact to audio quality; and Multi-Streaming, which provides for a more robust signal in an impaired channel.

The IBOC approach will allow broadcasters to introduce digital audio programming to listeners on their current dial positions using existing transmitters and antennas. IBOC DAB is both backward- and forward-compatible: current AM/FM receivers will still be able to receive the existing analog signals in the new system. When a station elects to turn off the analog signal in the future, IBOC DAB-compatible receivers will operate with the remaining all-digital signal.

For more information about Harman Kardon, please contact Franklyn Roth, Dobbin/Bolgla Associates, at 212-388-1400. Information is also available on the Web site at www.harmankardon.com.

The Harman Consumer Systems Group (HCSG) is a leading designer, manufacturer and marketer of a wide range of high-fidelity loudspeakers, audio and video components and multi-media systems for use in homes, automobiles and with computers. The Group's brands include JBL, Infinity, Harman Kardon, Mark Levinson, Revel, Proceed and Audioaccess.

HCSG is a division of Harman International Industries, Inc. Harman International (www.harman.com), is a leading manufacturer of high-quality, high fidelity audio and video products for the consumer and professional markets. The Company's stock is traded in the New York Stock Exchange under the Symbol: HAR.

Lucent Digital Radio, Inc. is a company developing IBOC DAB technology for AM and FM broadcasting worldwide. Lucent Digital Radio's IBOC system will be resistant to multipath and other forms of interference that impair current analog transmissions. Information is also available on the Web site at www.lucent.com/ldr.

For marketing and sales information about Lucent Digital Radio, please contact William Casey, Director, Marketing & Sales, on 908-580-7008 or williamcasey@lucent.com. Information is also available on the Web site at www.lucent.com/ldr.

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Note to Editors:

Lucent is hosting a **media conference call** concerning this announcement
Tuesday, August 31, at 10:00 am Eastern Time
Inside the U.S., the Dial-in Number is: **800-230-1085**
The call will be recorded and replayed for beginning at 1:00 pm EST on August 31 and concluding at 12:00 am EST September 3

The telephone number to call for the replay is **800-475-6701**; international callers should dial **320-365-3844**. The access code is **467781**